

## EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	0	dynamic\$4 near4 (allocat\$3 assign\$3) near (task process) same (database table list) same server. ab.	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 08:38
L2	6	dynamic\$4 near4 (allocat\$3 assign\$3) near (task process) same (database table list) same server	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 08:44
L3	48	dynamic\$4 near4 (allocat\$3 assign\$3) near (task process).ab.	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 08:44
L4	14	I3 and server and (database table list) and distribut\$3	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 08:52
L5	5397	718/100-108.ccls.	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 08:52
L6	11	I5 and I3	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 08:54
L7	1	server near set same (task near allocat\$3)	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 08:55
L8	43	server near set and (task near allocat\$3)	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 08:55
L9	4802969	@ad<="20000716"	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 08:55
L10	18	I8 and I9	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 08:56
L11	4987714	@ad<="20010116"	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 08:56

## EAST Search History

L12	18	l11 and l8	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 09:03
L13	0	"server set" same (redirect\$3 near task) same IP	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 09:04
L14	0	"server set" same (redirect\$3 near task)	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 09:04
L15	0	server adj1 set same (redirect\$3 near task)	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 09:04
L16	2	server adj1 set and (redirect\$3 near task)	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 09:05
L17	1155	servers same select\$3 with task	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 09:06
L18	15	servers same select\$3 with task same (IP) same (database table list)	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 09:07
L19	3	l18 and l11	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 09:06
L20	378	servers same select\$3 with task same (database table list)	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 09:07
L21	16	servers same select\$3 with task same (database table list).ab.	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 09:07
L22	7	l21 and l11	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 10:07
L23	1	"6983479".pn.	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 10:08

## EAST Search History

L24	273	distribut\$3 near server same (load near balanc\$3)	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 10:08
L25	27	distribut\$3 near server same (load near balanc\$3) same (attribute value rule criteria policy)	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 10:09
L26	12	25 and I11	US-PGPUB; USPAT; USOCR; EPO	OR	ON	2006/05/09 10:09



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Relevance scale ☐ ☐ ☐ ☐ ☐

### 1 [Adaptive TTL schemes for load balancing of distributed Web servers](#)



Michele Colajanni, Philip S. Yu

September 1997 **ACM SIGMETRICS Performance Evaluation Review**, Volume 25 Issue 2

Publisher: ACM Press

Full text available: pdf(488.09 KB) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

With ever increasing web traffic, a distributed Web system can provide scalability and flexibility to cope with growing client demands. Load balancing algorithms to spread the load across multiple Web servers are crucial to achieve the scalability. Various *domain name server* (DNS) based schedulers have been proposed in the literature, mainly for multiple homogeneous servers. DNS provides (logical) host name to IP-address mapping (i.e., the server assignment), but the mapping is not done f ...

### 2 [The state of the art in locally distributed Web-server systems](#)



Valeria Cardellini, Emiliano Casalicchio, Michele Colajanni, Philip S. Yu

June 2002 **ACM Computing Surveys (CSUR)**, Volume 34 Issue 2

Publisher: ACM Press

Full text available: pdf(1.41 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The overall increase in traffic on the World Wide Web is augmenting user-perceived response times from popular Web sites, especially in conjunction with special events. System platforms that do not replicate information content cannot provide the needed scalability to handle large traffic volumes and to match rapid and dramatic changes in the number of clients. The need to improve the performance of Web-based services has produced a variety of novel content delivery architectures. This article w ...

**Keywords:** Client/server, World Wide Web, cluster-based architectures, dispatching algorithms, distributed systems, load balancing, routing mechanisms

### 3 [An adaptive load balancing scheme for web servers](#)

James Aweya, Michel Ouellette, Delfin Y. Montuno, Bernard Doray, Kent Felske

January 2002 **International Journal of Network Management**, Volume 12 Issue 1

Publisher: John Wiley &amp; Sons, Inc.

Full text available: pdf(1.00 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper describes an overload control scheme for web servers which integrates

admission control and load balancing. The admission control mechanism adaptively determines the client request acceptance rate to meet the web servers' performance requirements while the load balancing or client request distribution mechanism determines the fraction of requests to be assigned to each web server. The scheme requires no prior knowledge of the relative speeds of the web servers, nor the work required t ...

#### 4 IP layer load balance using fuzzy logic under IPv6 anycast mechanism

Chi-Yuan Chang, Wei-Ming Chen, Han-Chieh Chao, T. G. Tsuei, Hong Bin Liu  
September 2005 **International Journal of Network Management**, Volume 15 Issue 5

**Publisher:** John Wiley & Sons, Inc.

Full text available:  [pdf\(228.98 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

With the emergence of databases and Internet technology, the way data is acquired and accessed has changed with more convenient service. After years of evolution, the current IPv6 Internet Protocol (IP) has enabled the user to check any database worldwide by logging onto the Internet whenever you want and regardless of where you are. The load balance or efficiency issue arises when many users overload a server or database. This paper addresses this issue using the anycast characteristics. An act ...

#### 5 Load distribution among replicated Web servers: a QoS-based approach



Marco Conti, Enrico Gregori, Fabio Panzieri

March 2000 **ACM SIGMETRICS Performance Evaluation Review**, Volume 27 Issue 4

**Publisher:** ACM Press

Full text available:  [pdf\(695.59 KB\)](#) Additional Information: [full citation](#), [abstract](#), [index terms](#)

A dominant factor for the success of an Internet based Web service is the Quality of Service (QoS) perceived by its users. The principal QoS attributes these users perceive include those related to the service "responsiveness", i.e. the service availability and timeliness. In this paper, we argue that QoS can be provided by distributing the processing load among replicated Web servers, and that these servers can be geographically distributed across the Internet. In this context, we discuss strat ...

**Keywords:** QoS, Web server, load distribution

#### 6 Load balancing for parallel forwarding

Weiguang Shi, M. H. MacGregor, Pawel Gbörzyski

August 2005 **IEEE/ACM Transactions on Networking (TON)**, Volume 13 Issue 4

**Publisher:** IEEE Press

Full text available:  [pdf\(526.74 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Workload distribution is critical to the performance of network processor based parallel forwarding systems. Scheduling schemes that operate at the packet level, e.g., round-robin, cannot preserve packet-ordering within individual TCP connections. Moreover, these schemes create duplicate information in processor caches and therefore are inefficient in resource utilization. Hashing operates at the flow level and is naturally able to maintain per-connection packet ordering; besides, it does not po ...

**Keywords:** Zipf-like distribution, load balancing, parallel IP forwarding

#### 7 Design and implementation of a portable and adaptable load balancing framework

Erik Putrycz

October 2003 **Proceedings of the 2003 conference of the Centre for Advanced Studies on Collaborative research**

**Publisher:** IBM Press

Full text available:  [pdf\(902.69 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Scaling applications to large networks and an increasing number of users has been since years a technical challenge. Today, well known technologies exist to scale applications to local networks but scaling to large networks with high latency is still a challenge. Load balancing at the middleware level allows more flexibility (in terms of granularity and distribution) than existing solutions based at lower system levels. However, it requires an execution infrastructure and mechanisms to be integr ...

## 8 Load balancing in distributed workflow management system



Li-jie Jin, Fabio Casati, Mehmet Sayal, Ming-Chien Shan

March 2001 **Proceedings of the 2001 ACM symposium on Applied computing**

**Publisher:** ACM Press

Full text available:  [pdf\(264.32 KB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)

**Keywords:** business process, load balancing, load index, workflow

## 9 Distributed cooperative Apache web server



Quanzhong Li, Bongki Moon

April 2001 **Proceedings of the 10th international conference on World Wide Web**

**Publisher:** ACM Press

Full text available:  [pdf\(306.36 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**Keywords:** Apache, DC-Apache, WWW, distributed Web server, load balancing, replication, scalable Web server

## 10 Protecting web servers from distributed denial of service attacks



Frank Kargl, Joern Maier, Michael Weber

April 2001 **Proceedings of the 10th international conference on World Wide Web**

**Publisher:** ACM Press

Full text available:  [pdf\(390.23 KB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**Keywords:** DDoS, Linux, class based routing, distributed denial of service attacks, web server security


## 11 Locality-aware request distribution in cluster-based network servers



Vivek S. Pai, Mohit Aron, Gaurov Banga, Michael Svendsen, Peter Druschel, Willy Zwaenepoel, Erich Nahum

October 1998 **ACM SIGPLAN Notices , ACM SIGOPS Operating Systems Review , Proceedings of the eighth international conference on Architectural support for programming languages and operating systems ASPLOS-VIII**, Volume 33 , 32 Issue 11 , 5

**Publisher:** ACM Press

Full text available:  [pdf\(1.59 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We consider cluster-based network servers in which a front-end directs incoming requests to one of a number of back-ends. Specifically, we consider *content-based request*

*distribution*: the front-end uses the content requested, in addition to information about the load on the back-end nodes, to choose which back-end will handle this request. Content-based request distribution can improve locality in the back-ends' main memory caches, increase secondary storage scalability by partitioning th ...

## 12 Load-balanced location management for cellular mobile systems using quorums and dynamic hashing

Ravi Prakash, Zygmunt Haas, Mukesh Singhal  
September 2001 **Wireless Networks**, Volume 7 Issue 5


**Publisher**: Kluwer Academic Publishers

Full text available:  [pdf\(282.87 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper presents a new distributed location management strategy for cellular mobile systems. Its salient features are fast location update and query, load balancing among location servers, and scalability. The strategy employs dynamic hashing techniques and quorums to manage location update and query operations. The proposed strategy does not require a home location register (HLR) to be associated with each mobile node. Location updates and queries for a mobile node are multicast to subsets o ...

**Keywords**: distributed location management, dynamic hashing, location independent numbering, mobile computing, quorum systems, tries

## 13 Dimensioning server access bandwidth and multicast routing in overlay networks

 Sherlia Y. Shi, Jonathan S. Turner, Marcel Waldvogel


January 2001 **Proceedings of the 11th international workshop on Network and operating systems support for digital audio and video**

**Publisher**: ACM Press

Full text available:  [pdf\(227.12 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Application-level multicast is a new mechanism for enabling multicast in the Internet. Driven by the fast growth of network audio/video streams, application-level multicast has become increasingly important for its efficiency of data delivery and its ability of providing value-added services to satisfy application specific requirements. From a network design perspective, application-level multicast differs drastically from traditional IP multicast in its network cost model and routing stra ...

## 14 Scheduling optimization for resource-intensive Web requests on server clusters

 Huican Zhu, Ben Smith, Tao Yang

June 1999 **Proceedings of the eleventh annual ACM symposium on Parallel algorithms and architectures**

**Publisher**: ACM Press

Full text available:  [pdf\(1.19 MB\)](#) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

## 15 A two-tier heterogeneous mobile Ad Hoc network architecture and its load-balance routing problem

Chi-Fu Huang, Hung-Wei Lee, Yu-Chee Tseng  
August 2004 **Mobile Networks and Applications**, Volume 9 Issue 4

**Publisher**: Kluwer Academic Publishers

Full text available:  [pdf\(1.28 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The mobile ad hoc network (MANET) has attracted a lot of interest recently. However, most of the existing works have assumed a stand-alone MANET. In this paper, we propose a two-tier, heterogeneous MANET architecture which can support Internet access. The low

tier of the network consists of a set of mobile hosts each equipped with a IEEE 802.11 wireless LAN card. In order to connect to the Internet and handle the network partitioning problem, we propose that the high tier is comprised of a subse ...

**Keywords:** ad hoc network, load balance, mobile computing, routing, wireless network

16 Defending against distributed denial-of-service attacks with max-min fair server-centric router throttles

David K. Y. Yau, John C. S. Lui, Feng Liang, Yeung Yam

February 2005 **IEEE/ACM Transactions on Networking (TON)**, Volume 13 Issue 1

**Publisher:** IEEE Press

Full text available:  pdf(820.35 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Our work targets a network architecture and accompanying algorithms for countering distributed denial-of-service (DDoS) attacks directed at an Internet server. The basic mechanism is for a server under stress to install a router throttle at selected upstream routers. The throttle can be the leaky-bucket rate at which a router can forward packets destined for the server. Hence, before aggressive packets can converge to overwhelm the server, participating routers proactively regulate the contribut ...

**Keywords:** congestion control, distributed denial of service, network security, router throttling

17 Dynamic load balancing of data parallel applications on a distributed network



Mounir Hamdi, Chi-Kin Lee

July 1995 **Proceedings of the 9th international conference on Supercomputing**

**Publisher:** ACM Press

Full text available:  pdf(1.06 MB) Additional Information: [full citation](#), [references](#), [index terms](#)

18 A market-based architecture for management of geographically dispersed, replicated Web servers



Mehmet Karaul, Yannis A. Korilis, Ariel Orda

October 1998 **Proceedings of the first international conference on Information and computation economies**

**Publisher:** ACM Press

Full text available:  pdf(1.02 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

**Keywords:** game theory, load balancing, market-based computing, pricing, resource allocation

19 Load-sensitive routing of long-lived IP flows



Anees Shaikh, Jennifer Rexford, Kang G. Shin

August 1999 **ACM SIGCOMM Computer Communication Review, Proceedings of the conference on Applications, technologies, architectures, and protocols for computer communication SIGCOMM '99**, Volume 29 Issue 4

**Publisher:** ACM Press

Full text available:  pdf(1.57 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Internet service providers face a daunting challenge in provisioning network resources,



due to the rapid growth of the Internet and wide fluctuations in the underlying traffic patterns. The ability of dynamic routing to circumvent congested links and improve application performance makes it a valuable traffic engineering tool. However, deployment of load-sensitive routing is hampered by the overheads imposed by link-state update propagation, path selection, and signaling. Under reasonable protoc ...

## 20 Application level performance: On the use and performance of content distribution



### networks

Balachander Krishnamurthy, Craig Wills, Yin Zhang

November 2001 **Proceedings of the 1st ACM SIGCOMM Workshop on Internet Measurement**

**Publisher:** ACM Press

Full text available: pdf(2.51 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citings](#), [index terms](#)

Content distribution networks (CDNs) are a mechanism to deliver content to end users on behalf of origin Web sites. Content distribution offloads work from origin servers by serving some or all of the contents of Web pages. We found an order of magnitude increase in the number and percentage of popular origin sites using CDNs between November 1999 and December 2000. In this paper we discuss how CDNs are commonly used on the Web and define a methodology to study how well they perform. A performanc ...

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